Reorganizing IT Resources into Depots

"Improving Efficiencies and Managing Hardware Lifecycles"

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Background

South Carolina Department of Health and Environmental Control (DHEC) is a statewide agency that operates facilities in all forty-six counties in the state of South Carolina. DHEC's role is to protect and promote the health of the public and of the environmental and to encourage the prosperity of conditions that impact Public Health. The agency has vast oversight of many complex issues affecting the citizens of South Carolina and the Information Technology (IT) infrastructure that supports this mission is equally varied and complex.

Historically DHEC's IT infrastructure has been separated by Bureaus, Districts, Program Areas, etc. The reorganization of the agency in the spring of 2013 consolidated DHEC into four Regions and Central Office. IT services were also consolidated into a single framework. Attachment 1 is the new DHEC organizational structure to which this paper may refer.

Problem Statement

The IT infrastructure mentioned in the background of this project was so varied that there were huge redundancies concerning purchases, support, and life cycles of equipment, as well as disposal of outdated equipment. It is necessary to reduce these redundancies and help the IT staff headquartered in various geographic areas of the state become more of a single unit "on the same page". The goal is to develop a process to streamline, consolidate, and standardize our IT infrastructure. This will help facilitate an ability to better plan our network design, reduce equipment waste, and put us in a better posture for strategic management of our infrastructure. The efforts to date have been immense

Data Collection and Analysis

Data collection of our infrastructure began with site visits and collections of photographs. It also encompassed inventory of all IT equipment. This will be further touched upon in the Asset Inventory below.

The first stop was to identify a "depot" location in each of the four Regions as well as Central Office. The locations were chosen on the following criteria.

1. Space (At least 500 – 1,000 square feet with access for truck delivery)
2. Convenience of access for all Regional IT staff (simply put "driving time")
3. Security (limited access to non-IT staff)

The locations that were chosen are:

- Central Office - Mills Jarrett
- Upstate Region - Greenville County Health Department
- Midlands Region - Richland County Health Department
- Pee Dee Region - Florence County Health Department Annex
- Low Country Region – Orangeburg County Health Dept.

All sites except Orangeburg are Regional Administrative Headquarters. Orangeburg was chosen in part because the Charleston area did not have adequate space in any of their existing facilities.

An IT staff person is headquartered in each of the depot locations and has been assigned the duties of management of the process. The depot manager's primary duties are to:

1. Ensure all new purchases are received and all purchase paperwork is completed.

2. Ensure all items are properly decaled and placed ready to be installed.

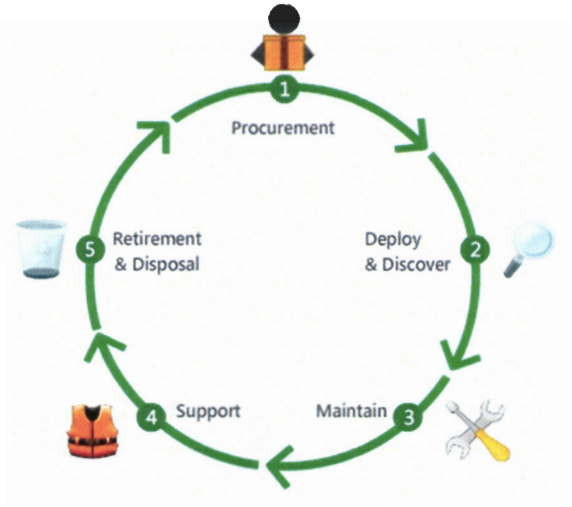
3. Ensure that they coordinate with their IT peers to keep the location of the installed equipment as accurate as possible for audit purposes.

4. Ensure that they are the primary contact for audits of the equipment.

5. Ensure that once the items are taken out of production, they assume responsibility for the processing of the used equipment out of the inventory system. This would include all paperwork, screenings by state property, and eventual disposal.

The remaining Regional IT staff is responsible for ensuring the moves and changes taking place with "active and production" equipment is being properly documented and relayed to the depot managers.

The lifecycle below is an accurate but simplified representation of the stages equipment is processed through initial purchase, time in production, and the end-of-life process.



A second example is Appendix A from "Microcomputer Lifecycle Services: Best Practice" (sourced from Gartner/Dataquest); by the South Carolina Enterprise Architecture; April 25 2007.

IT support in this scenario is not uncommon, our goal was to adapt this cycle to an organization needing these units to operate in their own geographic regions yet still experience the same benefits as a single unit. In other words, they needed to "act as one." There were

several separate parts of this process, but they are so interconnected they had to be addressed as part of a total solution.

Asset Inventory

Every agency in SC state government now uses South Carolina Enterprise Information System (SCEIS). However, SCEIS is only inventory. It does not provide the data we need on IT equipment such as Operating System (OS), potential for upgrades, patches and patch management, installed software, etc. We discussed and reviewed "off the shelf" software packages to address these needs. However, with any of these systems, one of the first steps would be a manual count of the equipment at each location. That essentially puts us back to using SCEIS as the foundation inventory tool. As we moved forward with refining the inventory portion of this system, we found we needed more ownership of the physical asset inventory process. This has required us to take on the inventory process of all DHEC IT equipment. We are currently at a "verification of assets" phase and are checking locations to ensure all equipment can be located. We often refer to this as the "Easter egg hunt" portion of the project. At this stage, we are simply looking for the asset tags of our equipment.

This portion of the process has been hampered by the scale of the project. We have a massive amount of equipment (almost 6000+ devices) in over 90+ locations across the state. In the current system, IT and non-IT such as furniture, medical equipment, vehicles, etc. were combined. These items are listed in SCEIS first by location identified with "location codes." These "locations codes" are the primary way equipment is located. Each facility has a unique location code and then a room number, etc. We are moving all IT equipment out of the old location codes into a new 5000 range specifically for IT. The 5000 range is broken down in groups of 100 so Central Office and each Region can have up to 100 location codes in their range. Appendix B is an example of the new structure.

We do not want to move items into our new site codes unless we can actively locate the equipment. Once this portion of the process is completed the result is a very accurate listing of equipment at each location with all IT in a single range for easy reporting.

The step above is tied to the hardware depot project in that we are consolidating upwards of 30+ different inventory processes into one system. The 30+ number comes from the fact that in the mid 90's DHEC comprised of twelve Health Services Districts with an equal number of Environmental Quality Control (EQC) Districts. Added to that was several areas in Central Office that also managed inventory. Many of these inventory managers were non-IT with other administrative duties. Each of these systems were unique in that as they did follow agency guidelines for inventory management but there was a range of interpretations of those guidelines. The supervision of the inventory staff was equally spread out. We have effectively consolidated those 30+ systems into one system managed by IT Operations with all new IT equipment being funneled into DHEC through one of the five depots. The Central Office Depot position is supervised by the Central Office IT Service Center Manager and the four Regional positions are supervised by the Regional IT Service Center Manager. These two Managers report to the Manager of IT Operations.

Standardization of Equipment

We purchase equipment in batches called "bulk purchases." We have created a Lifecycle Guide that details these bulk purchases in chronological order, along with the make and model of equipment. With the guide in place, the depot managers are able to enforce a minimum standard of equipment. Each of the five depot managers are looking at the same document as equipment rotates back to the depot. They can effectively make a uniform decision as to the status of each piece of equipment since they are all grading the equipment on a "written uniform standard." Prior to the depot there was little to no standardization in what was kept or disposed of at each location. The decision varied according to the 30+ asset managers previously mentioned.

Now as equipment is graded it falls into one of the three categories:

1. Good - Repurpose a piece of equipment.
2. Good but in need of repair - Repair and repurpose a piece of equipment.
3. Surplus - The equipment does not meet our agency minimum standard so it is processed through surplus.

Since the reorganization in spring 2013, we have processed out approximately 45 pallets (4 ft. x 4 ft. x 6 ft.) of outdated equipment being stored by various property custodians throughout the agency.

Security

All equipment is processed through established agency guidelines through one of the five depots. Depot locations are the only locations equipment is to be screened. Property requested to be picked up by Budget and Control Board is held at the depot until the time it is picked up. Any property declared "Junk" is also held at the depot to be picked up by the proper recycler. No equipment is to leave the agency without one of the five depots managers signing off that the equipment is properly sanitized.

OS and Software Licensing

OS and Software Inventory are essential to operations of the IT group. At this time, we have made progress but we are not where we would like to be with our software inventory process. Steps taken so far have been to:

1. Gather existing licenses and paperwork from the multitude of old Regional offices into the depot.
2. Attempt to identify and standardize in all cases where an opportunity arises. Standardization on hardware platforms has in turn closed the gap on various software packages.

3. Standardize the IT support team on to standardized toolsets (Dameware for remote control, or Windows Deployment Server for desktop images are two examples)
4. Identify old software packages that we no longer support either because staffs do not find them useful or we no longer have vendor support. In these cases, efforts have been made migrating staff to an agency standard package and decommission the rogue application from our network.
5. The depot is the point that workstations are provisioned for production. Their operating system and any necessary software is first installed at this location before being sent to the facilities.

By taking these steps at the depot where the equipment is first deployed we see fewer cases of having to revisit a site because the installation failed or we do not have the necessary software to finish the end user request.

Mobile Devices

This aspect of the depot is still being developed. We are finding that mobile devices, by their general nature, have to be treated differently from desktops. We still have the same support, security, and software concerns but their tracking is a different process.

In the case of mobile devices, we are using hand receipts signed by the employee as a tracking mechanism. These devices may or may not be connected to our network on a routine basis but the hand receipts are located in the depot. In the case of a lost device, the IT staff supporting the area can quickly locate the proper paperwork to identify the device and user and make adjustments to secure the network from a possible breach.

Existing Non-PC Equipment

Non-PC (Personal Computer) equipment such as printers, switches, etc., are brought into the depot and classified in the same manner as the PC. Considering their age, they may be

cleaned and stored in the depot for reuse. If broken but repairable, they are repaired and held until they are requested. IT staff are instructed not to leave excessive "spare" equipment at locations.

New Equipment Purchases

The five depots are to be the "ship to" location for all new purchases. For each of the new Regions, equipment is received and all appropriate paperwork is completed at the single location. This is a change from the 30+ locations in the prior structure. It has resulted in several benefits.

1. IT staff can clearly monitor the order status.
2. IT Equipment is receipted and decaled by fewer staff (one of the five) than in the old structure (30+).
3. IT Equipment is stored in a secure environment and only moved to a site a short time prior to the scheduled install date.
4. Again the depot serves as the one repository for a Region or Central Office.

Scheduled Installation from the Depot

The scheduled installation of equipment is necessary to ensure staff receives, in a timely manner, the equipment necessary to perform their duties. Scheduled installation of equipment takes into account the circumstances of the order, the urgency of the request, and the time needed to complete the installation. These factors help define the end user needs of the installation. Other factors include the program area requirements, technical requirements of the install, and the complexity of the applications.

The scheduling process of moving equipment out of the hardware depot is in its infancy but will quickly become one of the top customer support measures. Scheduling installation from depot locations allows equipment to be organized to get the right resources to the right people who need it. This is critical for equipment purchased with State and Federal funds since that

equipment needs to stay in the program area making the initial purchase. By scheduling installations from the depot and tightly managing that process in fewer locations, we can be more certain the allocation of equipment is correctly carried out.

Reporting Capabilities

The old structure of storing equipment in closets or other various rooms in facilities has created a huge issue with our strategic planning. A recently example has been the agencies attempt to move from Windows XP to a more current OS (Windows 7). The scores of old equipment scattered across dozens of sites has made any type of electronic count almost impossible. The cost in time and people power to purge the agency of this equipment has far outweighed any monetary gain in keeping some of this equipment.

We have just starting the reporting capabilities of this project. But what we are starting to see is a detailed system listing of all the equipment in a location. We can now run reports on the hardware and software and feel that an electronic gathering of data across the network is accurate and is not skewed by issues like the outdated equipment lingering on asset reports or inaccurate inventory.

Overcoming Issues

As the concept of the Hardware Depot developed, the greatest challenge has been the scope. It became obvious that one system has to be changed/addressed/fixed before another can be brought into play. "Scope creep" quickly became an issue. The second issue has been staff time. It is a very time consuming process. We are implementing these changes at the same time we are continuing to support increasingly more complex systems.

Oddly enough, cost has not been an issue. With most systems, there are costs, however, to date there has been very little cost at all. It is strictly a restructuring of existing tools and procedures to better fit the needs of IT. The goal of inventory has always been to locate equipment. We are building off that system to meet the needs associated with managing an IT

network and to create a clear life cycle process that is easily conveyed to various IT staff headquartered in locations across the state. Our measure of success will eventually be our yearly agency wide audits of our fixed assets. We strive for 100% accuracy and these can be measured each calendar year. We will also see measures of success in the reduced time it takes to produce reports on our infrastructure. Currently these requests for information could takes days or weeks and is a very manual process. These changes should reduce that time to hours through an automated reporting process.

In Summary

The goal of this project is not only to reduce redundancies concerning purchases, support, and life cycles of equipment, as well as disposal of outdated equipment by developing depot locations but also use them to improve the standards at every DHEC facility. In any type business, there has to be areas designated for the practice of receiving in and shipping out materials. IT is no exception. Our products are costly with complex requirements in their support. We have used these depot locations to consolidate those efforts into an economy of scale that also fits in the daily activities of the IT staff traveling around the state supporting these goals. "You can't manage what you don't know is there. You must have an accurate inventory." Mark, Kurt O (2009, April 24). Creating a PC Lifecycle Policy

In addition, to effectively manage PCs, "IT administrators need to deploy a combination of best practices and software tools to create PC lifecycle management." The Enterprise PC Lifecycle. *Microsoft.com.* The direction was clear as our effort was to adapt these concepts to our agency by creating the five depots within geographic areas that IT staff could reasonably drive to on what could be a daily basis. Even though each of these locations stand separately they all use standard processes and practices to manage our infrastructure in the most cost effective manner so that the agency gets the most out of its IT investment.

References

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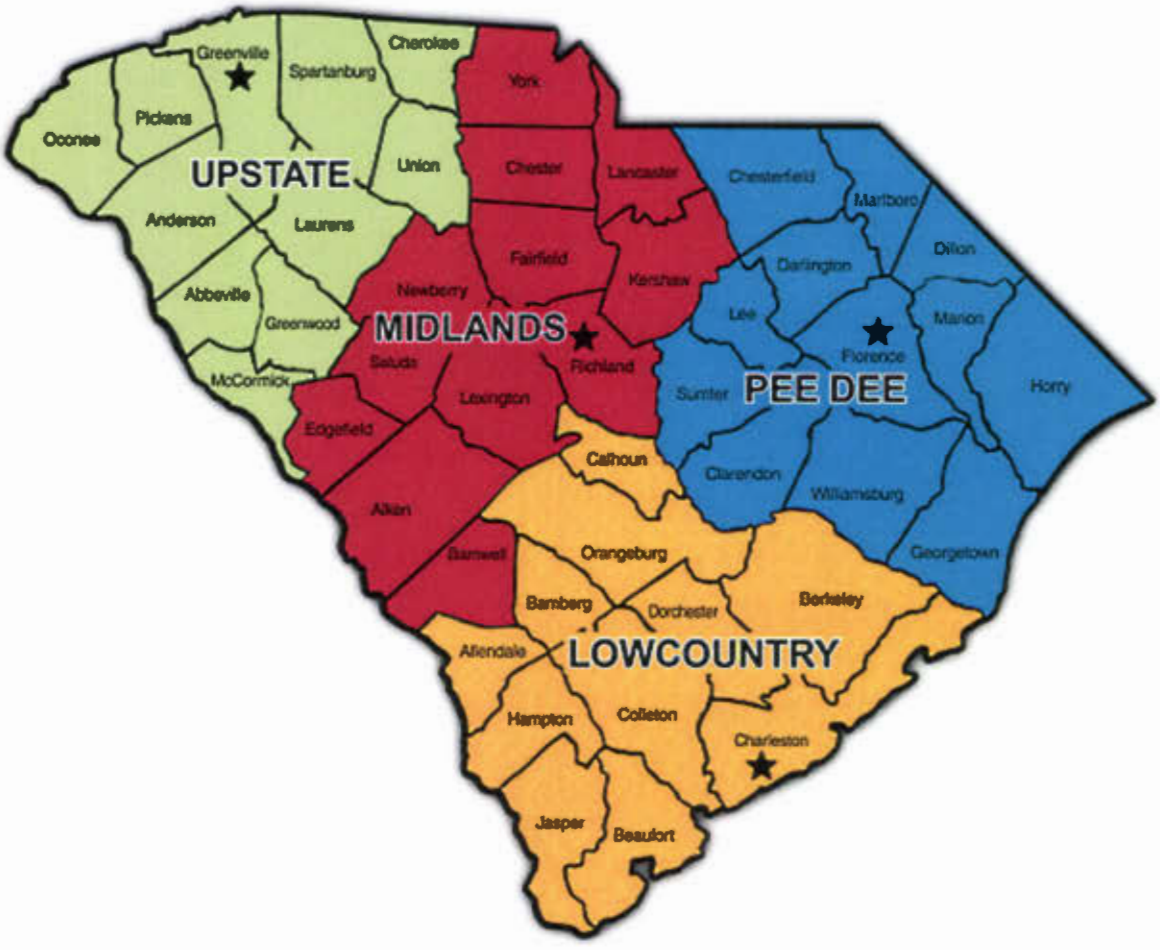
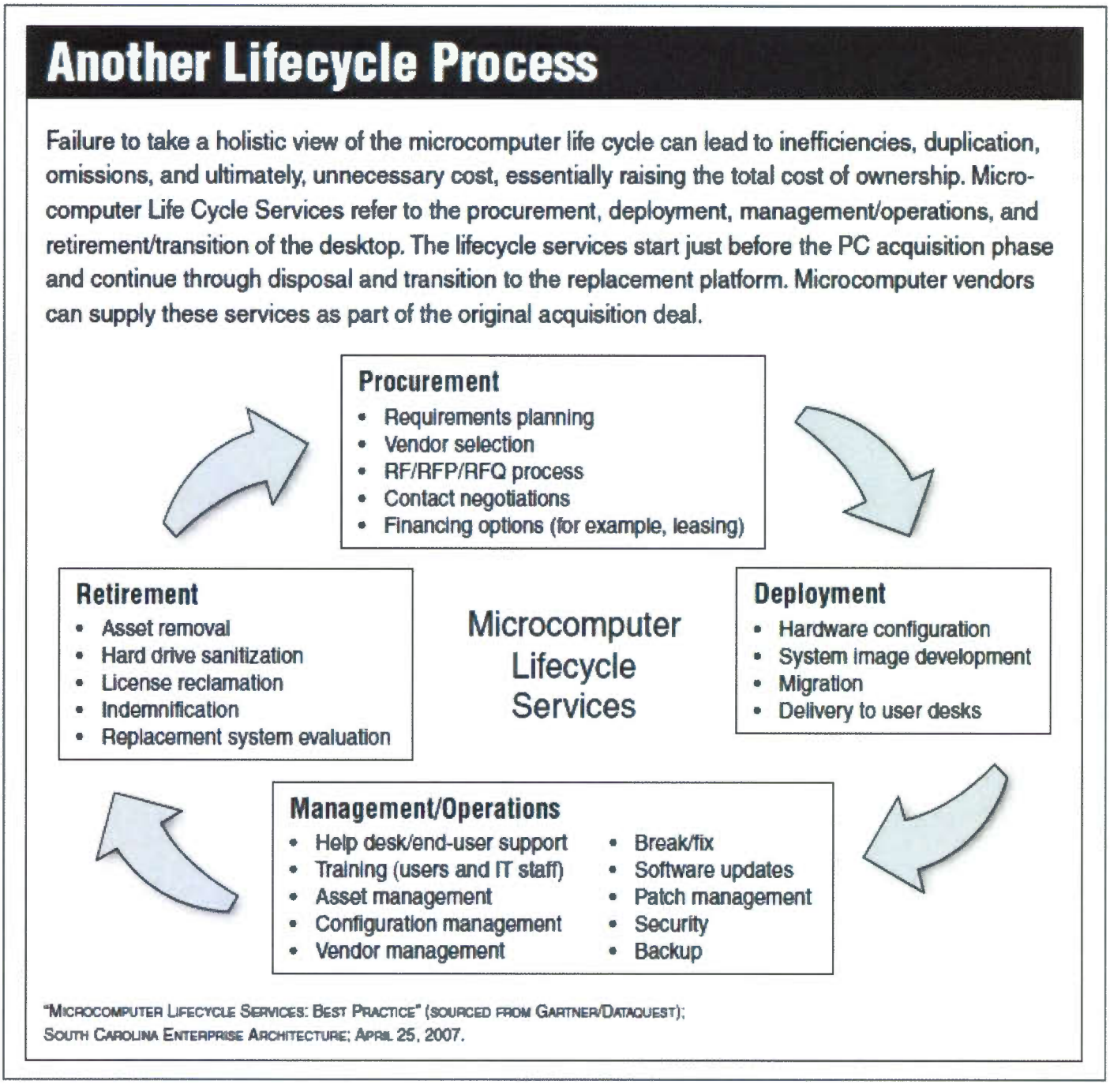
Attachment 1



Appendix A


Another Lifecycle Process
Failure to take a holistic view of the microcomputer life cycle can lead to inefficiencies, duplication, omissions, and ultimately, unnecessary cost, essentially raising the total cost of ownership. Microcomputer Life Cycle Services refer to the procurement, deployment, management/operations, and retirement/transition of the desktop. The lifecycle services start just before the PC acquisition phase and continue through disposal and transition to the replacement platform. Microcomputer vendors can supply these services as part of the original acquisition deal.
Procurement
Requirements planning
Vendor selection
RF/RFP/RFQ process
Contact negotiations
Financing options (for example, leasing)
Retirement
Asset removal
Hard drive sanitization
License reclamation
Indemnification
Replacement system evaluation
Microcomputer Lifecycle Services
Deployment
Hardware configuration
System image development
Migration
Delivery to user desks
Management/Operations
Help desk/end-user support
Training (users and IT staff)
Asset management
Configuration management
Vendor management
Break/fix
Software updates
Patch management
Security
Backup
"Microcomputer Lifecycle Services: Best Practice" (sourced from Gartner/Dataquest); South Carolina Enterprise Architecture; April 25, 2007.

Appendix B

Upstate	**5100 - 5199**		***Property Depot Contact - (IT Staff Member)***			
		5100	Greenville HD (Regional Office)	Greenville		362
		5101	Greenville EQC	Greenville		58
		5102	Abbeville HD	Abbeville		17
		5103	Anderson EQC	Anderson		
		5104	Anderson HD	Anderson		138
		5105	Cherokee HD	Cherokee		
		5106	Chesnee WIC Clinic	Spartanburg		4
		5107	Cowpens WIC Clinic	Spartanburg		3
		5108	GHS OB-GYN WIC Clinic	Greenville		3
		5109	Greenwood EQC	Greenwood		
		5110	Greenwood HD	Greenwood		104
		5111	Greer HD	Spartanburg		5
		5112	Inman WIC Clinic	Spartanburg		3
		5113	Laurens HD	Laurens		40
		5114	McCormick HD	McCormick		18
		5115	Pickens HD	Pickens		30
		5116	Point at Tobias	Spartanburg		
		5117	Seneca HD	Oconee		25
		5118	Simpsonville WIC Clinic	Greenville		2
		5119	Slater-Marietta WIC Clinic	Greenville		2
		5120	Spartanburg EQC	Spartanburg		
		5121	Spartanburg HD	Spartanburg		172
		5122	Walhalla HD	Oconee		4
		5123	Woodruff WIC Clinic	Spartanburg		4
		5124	Union HD	Union		10
		5125	USC Upstate	Spartanburg		
					Total # of devices	1004

Midlands	**5200 - 5299**		***Property Depot Contact - (IT Staff Member)***			

Appendix C

Bid #	Date of Bid	Form Factor	Manufacturer	Description	OEM Operating System	Memory	Origianal Purchase Quantity	PO#	Life Cycle
34	10/24/2008	Desktop Low End	Dell	Dell Optiplex 755 Minit	Windows XP	2GB	6	750390	Surplus
34	10/24/2008	Desktop High End	Dell	Dell Optiplex 755 Minit	Windows XP	2GB	9	750390	Surplus
34	10/24/2008	Laptop Standard	Dell	Dell Latitude E5500, In	Windows XP	2GB	22	750390	Surplus
34	10/24/2008	Laptop Thin/Light	HP	HP Compaq dc5850	Genuine Wi	2GB PC2-640	4	750390	Surplus
34	10/24/2008	Tablet	Gateway	Gateway MPC E-475M	Genuine Wi	2GB 667MHz	0	750390	Surplus
35	3/17/2009	Desktop Low End	HP	HP Compaq dc5850 Sma	Genuine Wi	GB PC2-640	4	765113	Surplus
35	3/17/2009	Desktop High End	HP	HP Compaq dc5850 Micr	Genuine Wi	GB PC2-640	56	765113	Surplus
35	3/17/2009	Laptop Standard	HP	HP IDS 6730b Base NB	Vista Busine	GB 800DDR2	29	765113	Surplus
35	3/17/2009	Laptop Thin/Light	HP	No Data	No Data		2		Surplus
35	3/17/2009	Tablet	HP	HP IDS 2730p Base NB	Vista Busine	GB 800DDR2	1	765113	Surplus
36	7/28/2009	Desktop Low End	Dell	Dell Optiplex 760 Small F	Windows XP	, 800MHz D	12	779464	Possible Salvage
36	7/28/2009	Desktop High End	Dell	Dell Optiplex 760 Base S	Windows XP	, 800MHz D	126	779464	Possible Salvage
36	7/28/2009	Laptop Standard	Hp	HP IDS 6730b Base NB	Vista Busine	GB 800DDR	15	779464	Possible Salvage
36	7/28/2009	Laptop Thin/Light	Dell	Dell Latitude E4300, Intel	Windows XP	4.0GB	5	779464	Possible Salvage
36	7/28/2009	Tablet	Hp	HP IDS 2730p Base NB	Vista Busine	GB 800DDR	3	779464	Possible Salvage
37	11/10/2009	Desktop Low End	HP	HP Compaq 6005 Pro Sr	Genuine Win	GB PC3-1060	32	not listed	Production
37	11/10/2009	Desktop High End	HP	HP Compaq 6005 Pro Mi	Genuine Win	GB PC3-1060	69	not listed	Production
37	11/10/2009	Laptop Standard	HP	HP Compaq 6730b Notet	Genuine Win	4GB	24	not listed	Production
37	11/10/2009	Laptop Thin/Light	Lenovo	Leonovo, Intel Core 2 Du	Windows Vis	4GB PC3	28	not listed	Possible Salvage
37	11/10/2009	Tablet	Lenovo	Leonovo, Intel Core 2 Du	Windows Vis	4GB	25	not listed	Possible Salvage
38	3/16/2010	Desktop Low End	HP	HP Compaq 6005 Pro Sr	Genuine Win	GB PC3-1060	131	804339	Production
38	3/16/2010	Desktop High End	HP	HP Compaq 6005 Pro Mi	Genuine Win	GB PC3-1060	48	804339	Production
38	3/16/2010	Laptop Standard	HP	HP Laptop, System C-Mi	Genuine Win	4GB	30	804339	Production
38	3/16/2010	Laptop Thin/Light	Lenovo	Lenovo Laptop, System I	Genuine Win	4GB	17	804339	Production
38	3/16/2010	Tablet		No Solicitation	N/A	N/A	N/A		Production
39	12/7/2010	Desktop Low End	HP	HP Compaq 6005 Pro Sr	Genuine Win	GB PC3-1060	25	4600074979	Production
39	12/7/2010	Desktop High End	HP	HP Compaq 6005 Pro Mi	Genuine Win	GB PC3-1060	139	4600074979	Production
39	12/7/2010	Laptop Standard	HP	HP Probook 6555b Notet	Genuine Win	4GB	15	4600074979	Production
39	12/7/2010	Laptop Thin/Light	Lenovo	Lenovo Think Pad X201,	Genuine Win	4GB	6	4600074979	Production
39	12/7/2010	Tablet	Lenovo	Lenovo Think Pad X201 i	Genuine Win	4GB	3	4600074979	Production
40	4/19/2011	Desktop Low End	HP	HP Compaq 6005 Pro Sr	Genuine Win	GB PC3-1060	58	4600094679	Production
40	4/20/2011	Desktop High End	Dell	Optiplex 780 Minitower B	Genuine Win	on-ECC 133	73	4600094679	Production
40	4/21/2011	Laptop Standard	HP	HP Probook 6555b Notet	Genuine Win	GB 1333 MH	20	4600094679	Production
40	4/21/2011	Laptop Thin/Light	Dell	Dell Latitude E4310	Genuine Win	4GB	7	4600094679	Production
40	4/22/2011	Tablet	HP	HP EliteBook 2740p Tab	Genuine Win	GB 1333 MH	4	4600094679	Production
41	11/17/2011	Desktop Low End	Lenovo	Value System A-M71e S	Genuine Win	GB 1333 MH	58	4600135840	Production
41	11/17/2011	Desktop High End	Dell	Optiplex 790 Minitower B	Genuine Win	GB 1333 MH	55	4600135840	Production
41	11/17/2011	Laptop Standard	HP	HP ProBook 6565b Notet	Genuine Win	GB 1333 MH	32	4600135840	Production
41	11/17/2011	Laptop Thin/Light	Lenovo	Lenovo Laptop Computer	Genuine Win	GB 1333 MH	15	4600135840	Production
41	11/17/2011	Tablet	Lenovo	Lenovo Tablet Computer	Genuine Win	GB 1333 MH	10	4600135840	Production